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Short Communication

A brief account of Orchidaceae in Sanjay Gandhi National Park, Mumbai, India

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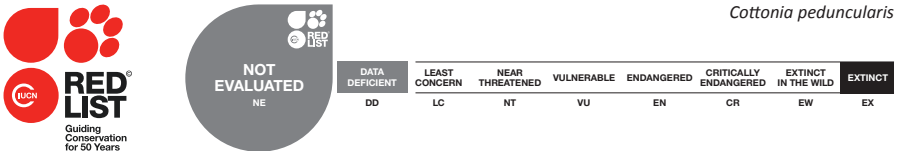
Abstract: Orchidaceae family of Sanjay Gandhi National Park has been studied. 15 taxa belonging to 12 genera have been enumerated. Out of which, eight genera are epiphytic and four terrestrial. Five species are new distributional records for Sanjay Gandhi National Park while 12 species mentioned by earlier authors have not been found in the present area.

Keywords: Distribution, orchid, phorophyte, Sanjay Gandhi National Park.

Orchidaceae is one of the largest families of flowering plants with 736 genera and 27,801 in five subfamilies (Chase et al. 2015; The Plant List 2014). They are most numerous in the humid tropics and subtropics. India represents 186 genera including 1331 species, of which 400 are endemic (Misra 2007).

Orchidaceae is comparatively well studied in the state of Maharashtra. The first major work was done by Graham (1839) in 'A Catalogue of Bombay Plants' and later by Dalzell & Gibson (1861) in Bombay Presidency. Gammie (1905–1912) published The Orchids of Bombay Presidency. Blatter & McCann (1931–1932) while revising the Flora of Bombay Presidency added 29 new species to T. Cooke's Orchidaceae list. Fernandez (1951–1954) studied monocotyledons while Shah (1960) assessed the sea-shore and monsoon flora of Salsette Island. Santapau & Kapadia (1966) studied the Orchids of Bombay (then Presidency). Forty-three years later the Botanical Survey of India (BSI) published the Flora of Sanjay Gandhi National Park (2005) which listed 22 species mostly on the authority of other botanists, viz., E. Blatter, H. Santapau, Z.J. Kapadia, G.L. Shah, R.R. Fernandez, P.S. Herbert, Dalzell & Gibson and C. McCann. We undertook this work to update the current status of orchids in the national park.

Sanjay Gandhi National Park (SGNP) is one of the six national parks in the state of Maharashtra (Mathur 1997), earlier known as Krishnagiri National Park and now popularly known as Borivali National Park. It is the 'only' protected area in the Mumbai metropolitan area. The park comprises an area of about 103.36km^2 and lies



Cottonia peduncularis

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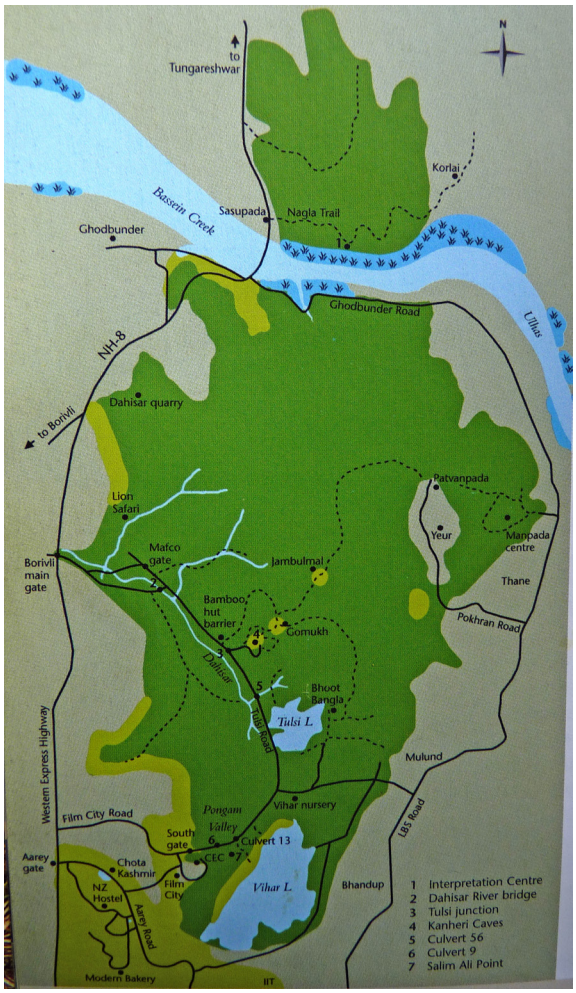
between 19⁰8'–19⁰21'N & 72⁰53'–72⁰58'E (Khawarey 2000). The limits of the national park are demarcated by Nagla block in the north, Yeoor range in the north-east, Bhandup in the east, Borivali in the west and Goregaon in the south which suggests that most of the park area is surrounded by the metropolitan city of Mumbai. A few elevated areas are assigned to this protected area due to the spur of the northern Western Ghats.

The forest type is represented by a tropical moist deciduous forest with patches of tropical semi-evergreen forest at higher altitudes (Champion & Seth 2005) with moist teak bearing forest, southern moist mixed deciduous forest, mangrove scrub and west coast semi-evergreen forest as the sub-types (Pradhan et al. 2005). These forests play an important role in harbouring 15 species of orchids. The terrestrial orchid species are mostly found in open forest patches while the phorophytes like *Tectona grandis*, *Terminalia crenulata* and so on are home to epiphytic taxa.



Materials and Methods

Visits to the study area for documenting the orchid species were conducted with necessary permissions from the forest department (Fig. 1; Images 1–2). The description of the species along with its basionym, distribution and flowering season have been mentioned. The IUCN status of the species has been stated in individual species account as per Singh & Karthikeyan (2000) and Kumar et al. (2001). The specimens collected have been processed as per Bridson & Foreman (1999). Fragile specimens like those of *Oberonia recurva* have been preserved in a Kew mixture. All the specimens will be deposited at Blatter Herbarium at St. Xavier's College, Mumbai (BLAT). The specimens of previous collectors deposited at BLAT were studied. The GPS co-ordinates were recorded with the help of Garmin etrex Vista HCx.

1. Acampe praemorsa (Roxb.) Blatt. & McCann in *J. Bombay Nat. Hist. Soc.* 35:495, 1932; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 11, 1996; Almeida, Fl. Maharashtra V A: 21, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 582, 2005.

Epidendrum praemorsum Roxb., Pl. Cor. 1: 34, 1795.

Type: India, Circar mountains, Roxburgh s.n. (K).

Epiphyte. Stems monopodial, elongated, erect. Leaves linear, coriaceous, flat, irregularly 2-lobed, lobes

Figure 1. Sanjay Gandhi National Park (© Sunjoy Monga 2003; map not to scale) along with Map of India (©Bruce Jones Design Inc 2010)

Image 1. Sanjay Gandhi National Park forest in monsoon

Image 2. Sanjay Gandhi National Park forest in summer

rounded with acute sinus. Flowers sub-corymbose, fleshy, spurred, yellow with maroon streaks.

Flowering: February–August

Location: Nagla, NIC (Nature Information Centre – SGNP), Vihar lake, Yeoor

Phorophyte: Grows in huge clumps on *Tamarindus indicus, Tectona grandis* and *Terminalia crenulata*

Distribution: India, Sri Lanka and Myanmar.

Exsiccata: SWC 19

GPS co-ordinates: NIC - 19^{0}13'46"N & 72^{0}52'03"E

Specimens examined: 9789, 23.iv.1958, Malad Hills, Mumbai, Maharashtra, India, coll. G.L. Shah; 1111, 24.iv.1955, Ghodbundar, coll. Z.J. Kapadia; SH1615, 19.iv.1956, National Park, Mumbai, coll. P.S. Herbert.

Notes: Commonly known as Tiger orchid due to the streaks on sepals and petals (Image 3).

2. Aerides maculosa Lindl. in Edwards's Bot. Reg. 31: 58, 1845; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 13, 1996; Almeida, Fl. Maharashtra V A: 22, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 582, 2005.

Image 3. *Acampe praemorsa*

Type: India, Tamil Nadu, Courtallam (Iconotype).

Epiphyte. Leaves linear, bilobed at the apex, mottled with purple dots on the underside. Flowers white with pink suffused, inodorous in racemes; petals crenulate, midlobe pink with minutely rough margin; Spur conical and curved like a hook.

Flowering: May–June.

Location: Kanheri caves, Bamboo Hut trail, Nagla, Tulsi trail, Yeoor.

Phorophyte: *Dalbergia latifolia, Bridelia spinosa, Butea monosperma, Tectona grandis*

Status and Distribution: Endangered (Kumar et al. 2001); Endemic to India.

Exsiccata: SWC 44

GPS co-ordinates: Bamboo Hut trail - 19^{0}12'52"N & 72^{0}54'37"E

Specimens examined: NYD 114, 02.viii.1959, Chandip, Thane, Maharashtra, India, coll. N.Y. Das; ZK 1947, 29.v.1956, Badlapur, Thane, coll. Z.J. Kapadia; NYD 3197, 28.ii.1961, Usgaon, Thane, coll. N.Y. Das.

Notes: Commonly referred to as the Fox-brush orchid. An epiphyte also found growing on the rocks of Kanheri caves.

3. Cottonia peduncularis (Lindl.) Rchb. f., Cat. Orch.-Samml. Schiller ed. 3:22, 1857; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 17, 1996; Almeida, Fl. Maharashtra V A: 31, 2009.

Vanda peduncularis Lindl., Gen. Sp. Orchid. Pl. 216, 1833.

Type: Sri Lanka, *Macrae 40* (K).

Epiphyte with a short stem. Leaves lyrate, bilobed. Flowers in a few flowered racemes with long peduncles; Sepals and petals yellow; labellum reddish brown with yellow margin.

Flowering: February–May

Location: Yeoor

Image 4. *Cottonia peduncularis*

Phorophyte: *Tectona grandis, Mangifera indica*

Distribution: India and Sri Lanka

Exsiccata: SWC 5

GPS co-ordinates: Yeoor - 19°14'31"N & 72°56'27"E

Specimens examined: NYD 3198, 28.ii.1961, Usgaon, Thane, Maharashtra, India, coll. N.Y. Das; ZK 1167 07.vi.1955, Salsette, Mumbai, coll. Z.J. Kapadia; ZK 1911, 19.iii.1956, Anmod, North Kanara, Karnataka, coll. Z.J. Kapadia.

Notes: Commonly called as Bee Orchid. The population is localized and found in the upper canopy (Image 4).

4. Dendrobium ovatum (L.) Kraenzl. in Pflanzenr. IV. 50 II B 21:71, 1910; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 23, 1996; Almeida, Fl. Maharashtra V A: 38, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 584, 2005.

Epidendrum ovatum L. Sp. Pl. 952, 1805.

Type: India, Concan-Malabar, Stocks s.n. (K) (Epitype)

Epiphyte with long plurinodal pseudobulbs. Leaves lanceolate, acute, appear in monsoon. Flowering stalks grow in winter, flowers cream coloured with green centre, fragrant, pedicelled.

Flowering: December–January

Location: Highest point, Nagla, Shilonda trail, Yeoor

Phorophyte: *Bridelia spinosa, Butea monoperma, Lannea coromandelica, Memecylon umbellatum, Tectona grandis, Terminalia crenulata, Wrightia tinctoria*

Status and Distribution: Vulnerable (Kumar et al. 2001); Endemic to peninsular India.

Exsiccata: SWC 4

GPS co-ordinates: Yeoor - 19°14'32"N & 72°56'26"E

Specimens examined: ZK 1103, 05.ii.1955, Mumbai, Maharashtra, India, coll. Z.J. Kapadia; Shah 9632, 14.xii.1957, Malad - near the pond, Mumbai, coll. G.L. Shah; NYD 3225, 04.iii.1961, Shivansai, Thane, coll. N.Y. Das.

Image 5. *Dendrobium ovatum*

Notes: It is the commonest of the orchid species found in the National Park (Image 5).

5. Eulophia herbacea Lindl., Gen. & Sp. Orchid Pl. 182, 1833; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 29, 1996; Almeida, Fl. Maharashtra V A: 47, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 584, 2005.

Type: India, N.W. India, Royle s.n. (K)

Terrestrial with tubers. Leaves elliptic-lanceolate, many-nerved. Flowers in lax racemes; sepals green, petals white; labellum white with pink-purple margins and hairy. Floral and leaf stalks are separate.

Flowering: June–July

Location: Phansaache paani trail, Yeoor

Distribution: Indian subcontinent, Indo-China, Central and South China.

Exsiccata: SWC 33

Specimens examined: 15661, 11.vii.1953, Mumbra, Thane, Maharashtra, India, coll. H. Santapau; KVS 3616, 29.vi.1954, Mumbra, coll. K.V. Shenoy; ZK 1252, 25.vi.1955, Borivili National Park, coll. Z.J. Kapadia.

Notes: Grows in open forest patches along with

Ensete superbum and *Leea indica* (Image 6).

6. Eulophia ochreata Lindl. in *J. Proc. Linn. Soc.,* Bot. 3:24, 1858; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 29, 1996; Almeida, Fl. Maharashtra V A: 48, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 584–585, 2005.

Type: India, Konkan, Law s.n. (K)

Terrestrial with inverted cone-like tubers. Leaves ovate, acuminate, many-nerved. Flowers yellow with brown centre. The leaf stalk appears alongwith the flowering stalk.

Flowering: June

Location: Bamboo Hut trail, Yeoor

Status & Distribution: Endangered (Singh & Karthikeyan 2000); Endemic to India

Exsiccata: SWC 31

GPS co-ordinates: Yeoor - 19^{0}15'17"N & 72^{0}55'52"E

Specimens examined: ZK 1266, 05.vii.1955, Mumbra, Thane, Maharashtra, coll. Z.J. Kapadia; R 1841, 22.vi.1954, National Park, Borivli, Mumbai, R.R. Fernandez; 11051, 25.vi.1950, Kanheri caves, coll. H, Santapau.

Notes: In Yeoor, it grows on steep slopes in shady areas while on the Bamboo Hut trail in open forest patches (Image 7).

7. Habenaria gibsonii* var. *foetida Blatt. & McCann in *J. Bombay Nat. Hist. Soc.* 36: 16, 1932.

Habenaria foliosa A. Rich. var. *foetida* (Blatter & McCann) Bennett in *J. Econ. Taxon. Bot.* 5: 452, 1984; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 37, 1996; Almeida, Fl. Maharashtra V A: 56–57, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 587–588, 2005.

Type: India, Maharashtra, Khandala, Hallberg, s.n. (BLAT).

Terrestrial with a tuber. Stem leafy. Racemes dense. Flowers white with green at the centre, foetid smelling.

Flowering: August–September

Location: Yeoor

Status and Distribution: Critically Endangered (Kumar et al 2001); Endemic to peninsular India.

Exsiccata: SWC 2

GPS co-ordinates: Yeoor - 19^{0}13'41"N & 72^{0}57'13"E

Specimens examined: R 4221, 18.viii.1957, Mumbai, Maharashtra, India, coll. R.R. Fernandez; SH 2741, 18.vii.1957, Borivali National Park, coll. P.S.Herbert.

Notes: Grows in the shade of shrubs; soil enriched

Image 6. *Eulophia herbacea*

Image 7. *Eulophia ochreata*

Image 8. *Habenaria longicorniculata*

Image 9. *Nervilia aragoana*

with decayed leaf litter. Flowers foetid smelling during the daytime.

8. Habenaria longicorniculata J. Graham Cat. Pl. Bombay 202, 1839; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 39, 1996; Almeida, Fl. Maharashtra V A: 59–60, 2009.

Type: India, Maharashtra, Khandala, Law s.n. (?).

Terrestrial. Leaves at the base, oblong-lanceolate. Flowers green, scented, few (2–4) in racemes; labellum white 3-lobed.

Flowering: July–August

Location: Highest point

Status and Distribution: Near Threatened (Kumar et al. 2001); Endemic to India.

GPS co-ordinates: Highest point - 19^{0}12'49"N & 72^{0}55'30"E

Notes: Grows in the undergrowth of *Carvia callosa*. Very few specimens were growing on the highest point, hence no voucher specimen was collected (Image 8).

9. Habenaria ovalifolia Wight, Icon. Pl. Ind. Orient. 5:t. 1708, 1851; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 41, 1996; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 589, 2005.

Habenaria stenopetala Lindl., Gen. & Sp. Orchid. 319, 1835 (non p.324, 1835); Almeida, Fl. Maharashtra V A: 63, 2009.

Type: India, Anamulay, s.coll. s.n. (K)

Terrestrial. Leaves positioned on the upper part of the stem, ovate-lanceolate, acute apex. Flowers green; the apex of midlobe of the labellum fused with the tip of the petals.

Flowering: September

Location: Bamboo Hut trail, Kanheri caves, Nagla, Peacock point, Yeoor.

Status and Distribution: Near Threatened (Kumar et al 2001); Endemic to southern India.

Exsiccata: SWC 27

GPS co-ordinates: Bamboo Hut trail - 19^{0}13'50"N & 72^{0}54'59"E

Specimens examined: SH 2826, 04.viii.1957, Borivali NP, Mumbai, Maharashtra, India, coll. P.S. Herbert; R 1919, 11.viii.1957, Borivali NP, coll. R.R. Fernandez.

Notes: Grows in open forest patches alongwith *Peristylus plantagineus*.

10. Nervilia aragoana Gaudich. Voy. Uranie 422, 1829; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 48, 1996; Almeida, Fl. Maharashtra V A: 68-69, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 590–591, 2005.

Type: Pacific Islands, Guam, *Gaudichaud s.n.* (P).

Terrestrial. Tubers sub-globose. Leaves solitary with cordate base. Flowers few (2–7) green with purple tinge on the labellum. Leaves appear after the fruiting stalk disappears. Leaves cordate to orbicular with a long petiole.

Image 10. *Oberonia recurva*

Image 11. *Peristylus plantagineus*

Flowering: June

Location: Bamboo Hut trail, Kanheri caves, Yeoor

Exsiccata: SWC 11

Distribution: Tropical and sub-tropical Asia to Pacific

GPS co-ordinates: Bamboo Hut trail - 19°12'42"N & 72°53'55"E

Specimens examined: R1816, 14.vi.1954, Borivali NP, Mumbai, Maharashtra, India, coll. R.R. Fernandez; ZK 1247, 25.vi.1955, Borivili NP, coll. Z.J. Kapadia.

Notes: Grows along the forest path with *Curculigo orchioides* (Image 9).

11. Oberonia recurva Lindl. Edwards's Bot. Reg. 25(Misc.):14, 1839; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 52, 1996; Almeida, Fl. Maharashtra V A: 75, 2009.

Type: India, Maharashtra, Bombay, *Loddiges s.n.* (K).

Pendulous epiphyte. Leaves succulent, green with orange on the margins. Flowers brownish-orange in dense cymes.

Flowering: February–March

Location: Yeoor

Phorophyte: *Tectona grandis*

Status and Distribution: Indian subcontinent.

Exsiccata: SWC – S 1

GPS co-ordinates: Yeoor - 19°14'34"N & 72°56'10"E

Specimens examined: ZK 1105, 05.ii.1955, Thana - Bombay, Mumbai, Maharashtra, India, coll. Z.J. Kapadia; NYD 3223, 04.iii.1961, Thane, Shivansai, coll. N.Y. Das.

Notes: The species has been observed to grow on the lower branches of Teak trees (Image 10).

12. Peristylus plantagineus (Lindl.) Lindl. Gen. Sp. Orch. Pl. 300, 1835; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 57, 1996; Almeida, Fl. Maharashtra V A: 80, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 591, 2005.

Herminium plantagineum Lindl. Edwards's Bot. Reg. 18:t. 1499, 1832.

Type: Sri Lanka, *Macrae s.n.* (K).

Terrestrial. Leaves clustered at the middle of the stem. Flowers in racemes; Sepals brown; Petals cream in colour; labellum slightly lobed.

Flowering: August–September

Location: Bamboo Hut trail, Highest point, Yeoor

Distribution: Indian subcontinent

Exsiccata: SWC 41

GPS co-ordinates: Bamboo Hut trail - 19°13'90"N & 72°54'80"E

Specimens examined: SH 2521, 24.x.1956, Borivli National Park, Mumbai, Maharashtra, India, coll. P.S. Herbert; R2134, 29.x.1955, Borivli National Park, coll. R.R. Fernandez.

Notes: Grows in open forest patches and alongside forest paths (Image 11).

13. Rhynchostylis retusa (L.) Blume Bijdr. 286, 1825; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 60, 1996; Almeida, Fl. Maharashtra V A: 86-87, 2009; Pradhan et al., Fl. of Sanjay Gandhi National Park, Ser. 3, 591–592, 2005.

Epidendrum retusum L., Sp. Pl. 953, 1753.

Type: India, Kerala, Hortus Malabaricus (Iconotype).

Epiphyte. Leaves bilobed. Flowers white with pink blotches in dense racemes, scented.

Flowering: May–June

Location: Bamboo Hut trail, Nagla, Shilonda trail, Yeoor

Phorophyte: *Pterocarpus marsupium, Schleichera oleosa, Tectona grandis*.

Distribution: Indian subcontinent, Indo-China,

Image 12. ***Vanda testacea***

Malesia, Central China.

Exsiccata: SWC 1

GPS co-ordinates: Yeoor - 19°14'30"N & 72°56'28"E

Specimens examined: Shah 4626, 11.vii.1955, Malad, South of Quarry Hills, Mumbai, Maharashtra, India, coll. G.L. Shah; Shah 4630, 11.vii.1955, Malad, coll. G.L. Shah.

Notes: Commonly called the Fox-tail Orchid; 'Seetechi veni' in Marathi.

14. Smithsonia viridiflora (Dalzell) Saldanha in *J. Bombay Nat. Hist. Soc.* 71: 75 1974.

Aerides dalzelliana (Sant.) Garay in Bot. Mus. Leafl. Harv. Univ. 23(4):158, 1972; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 12, 1996. *Gastrochilus dalzellianus* (Santapau) Santapau & Kapadia in *J. Bombay Nat. Hist. Soc.* 59: 842, 1962; Almeida, Fl. Maharashtra V A: 50–51, 2009.

Micropera viridiflora Dalzell in Hooker's *J. Bot. Kew Gard. Misc.* 3: 282 1851.

Type: India, Bombay, Dalzell s.n. (K)

Epiphyte. Leaves elliptic-lanceolate, bilobed at apex. Flowers in corymbs, white; labellum white suffused with pink blotches.

Flowering: May–June

Location: Yeoor

Phorophyte: *Catunaregam spinosa, Schleichera oleosa, Tectona grandis*

Status & Distribution: Endangered (Kumar et al. 2001); Endemic to south-west India; Endemic to south-west India.

Exsiccata: SWC 6

GPS co-ordinates: Bamboo Hut trail - 19°14'33"N & 72°56'12"E

Specimens examined: SMA -2300, 21.v.1979, Amboli - Chaukul, Sawantwadi, Sindhudurg, Maharashtra, India, coll. S.M. Almeida; 487, 28.v.1942, Raigad, Khandala, St. Xavier's Villa grounds, coll. H. Santapau.

Notes: A very small population of probably not more than 20 specimens is found in the national park.

15. Vanda testacea (Lindl.) Rchb.f. Gard. Chron. n.s., 8: 166, 1877; Lakshminarasimhan in Sharma et al., Fl. Maharashtra State Monocot. 63, 1996.

Vanda testacea (Lindl.) Reichb.f. var. *parviflora* (Lindl.) Almeida,Fl. Maharashtra 5A: 90–91, 2009.

Aerides testacea Lindl., Gen. Sp. Orchid. Pl. 238, 1833.

Type: Sri Lanka, *Macrae s.n.* (K).

Epiphyte. Leaves linear, conduplicate, bilobed at the apex. Flowers in a few flowered racemes, yellow; labellum bluish-purple.

Flowering: May–June

Location: Yeoor

Phorophyte: *Tectona grandis*

Distribution: Indian subcontinent, Indo-China

Exsiccata: SWC7

GPS co-ordinates: Yeoor - 19°14'39"N & 72°56'25"E

Specimens examined: 10970 (2), May 1950, Thana, Thane, Maharashtra, India, coll. H. Santapau; ZK 901, 12.xii.1954, Kasara, coll. Z.J. Kapadia.

Notes: Grows along with *Cottonia peduncularis; a* very localized population (Image 12).

Results

The authors have made new additions - *Cottonia peduncularis*, *Habenaria longicorniculata*, *Oberonia recurva*, *Smithsonia viridiflora*, *Vanda testacea* to the Orchidaceae of the Sanjay Gandhi National Park. Of the documented species, seven are endemic (Singh & Karthikeyan 2000; Kumar et al. 2001; Jalal & Jayanthi 2012) and most of the species face threats on a larger scale, due to habitat loss or fragmentation, human interference and so on.

Discussion and Conclusion

Studies on the Bombay Presidency have been done since the 1830s. In the course of 175 years, the geographical boundaries of Mumbai District have become smaller. Sanjay Gandhi National Park is one-fifth of the city area. Various locations from the National Park have neither been studied nor mentioned in the publications. The authors have taken efforts to visit various trails/locations inside the National Park. Fifteen species were documented, of which, eight are epiphytic and seven are terrestrial.

Referring to earlier records, species like *Aerides ringens* and *Cymbidium aloifolium* are doubtful

mentions while *Dendrobium barbatulum*, *Habenaria commelinifolia*, *Habenaria digitata, Habenaria foliosa var. gibsonii, Habenaria grandifloriformis, Habenaria marginata, Habenaria plantaginea, Habenaria stenopetala, Malaxis rheedei* and *Peristylus stocksii* could not be found.

The presence of seven endemic orchids depicts a very high conservation value of this national park and hence these orchids along with their habitat need to be conserved.

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